



# UNITED STATES PATENT AND TRADEMARK OFFICE

*u*  
UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/530,446	04/05/2005	Gary L. Cantrell	1585 WO/US	4806

7590 10/13/2006  
Jeffrey S Boone  
Mallinckrodt Inc  
675 McDonnell Boulevard  
PO Box 5840  
St Louis, MO 63134

EXAMINER
----------

AULAKH, CHARANJIT

ART UNIT	PAPER NUMBER
----------	--------------

1625

DATE MAILED: 10/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/530,446

Applicant(s)

CANTRELL ET AL.

Examiner

Charanjit S. Aulakh

Art Unit

1625

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-3,6,7,11,15,28-32,34,36-39 and 57-61 is/are pending in the application.
- 4a) Of the above claim(s) 57-61 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3,6,7,11,15,28-32,34 and 36-39 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 6/29/05, 6/30/06.
- 4) ☒ Interview Summary (PTO-413)  
Paper No(s)/Mail Date 10/5/06.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_.

Art Unit: 1625

### **DETAILED ACTION**

1. According to a preliminary amendment filed on April 5, 2005, the applicants have canceled claims 4, 5, 8-10, 12-14, 16-27, 33, 35 and 40-56.
2. Claims 1-3, 6, 7, 11, 15, 28-32, 34, 36-39 and 57-61 are pending in the application.

### ***Election/Restrictions***

3. Restriction is required under 35 U.S.C. 121 and 372.

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1.

In accordance with 37 CFR 1.499, applicant is required, in reply to this action, to elect a single invention to which the claims must be restricted.

Group I, claim(s) 1-3, 6, 7, 11, 15, 28-32, 34 and 36-39, drawn to A process for preparation of quaternary derivative of a tertiary N-substituted morphine alkaloid.

Group II, claim(s) 57-61, drawn to A process for separation of a liquid mixture of a 3-alkoxymorphinan alkaloid from a 3-hydroxymorphinan alkaloid.

4. The inventions listed as Groups I and II do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons:

The inventions I and II are a combination of different categories of claims; see PCT Administrative Instructions Annex B Part I (d) (e) (i).

5. During a telephone conversation with the applicant's attorney, Ms. Christine M.

Rebman on Oct. 5, 2006, a provisional election was made with traverse to prosecute the invention of group I, claims 1-3, 6, 7, 11, 15, 28-32, 34 and 36-39. Affirmation of this election must be made by applicant in replying to this Office action. Claims 57-61 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Art Unit: 1625

6. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

***Specification***

7. This application does not contain an abstract of the disclosure as required by 37 CFR 1.72(b). An abstract on a separate sheet is required.

***Claim Rejections - 35 USC § 112***

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claim 28 recites the limitation "OTHP, OSiR3, OBs, OTs, OMs, OBz and OBn for variables Y and Z" in claim 1. There is insufficient antecedent basis for this limitation in the claim.

***Claim Rejections - 35 USC § 102***

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. Claims 1-3, 6, 7, 11, 29-32, 34 and 36-38 are rejected under 35 U.S.C. 102(b) as being anticipated by Goldberg ( U.S. Patent 4,176,186, cited on applicant's form 1449 ). Goldberg discloses a process for quaternizing a tertiary N-substituted noroxymorphone. The process disclosed in examples 5 and 11 by Goldberg for quaternizing noroxymorphone by methyl bromide using dimethylformamide as a solvent anticipates

Art Unit: 1625

the instant claims when A represents  $-C(O)$  and Y represents  $-OH$  in the instant compounds of formulae 1, 1 A, 2, 2 A, 3 and 3 A.

11. Claims 1, 2, 6, 7, 11, 29-32, 34 and 36-39 are rejected under 35 U.S.C. 102(b) as being anticipated by Iorio ( Eur. J. Med. Chem., cited on applicant's form 1449 ).

Iorio discloses diastereoisomeric quaternary morphonium salts: synthesis, stereochemistry and analgesic properties. The process for quaternizing morphine or alkylmorphines by allyl bromide using acetonitrile as a solvent disclosed by Iorio anticipates the instant claims when A and Z represent hydroxyl groups in the instant compounds of formulae 1, 1 A, 2, 2 A, 3 and 3 A.

12. Claims 1-3, 6, 7, 11, 29-32, 34 and 36-38 are rejected under 35 U.S.C. 102(b) as being anticipated by Funke ( J. Chem. Soc. Perkin Trans., cited on applicants form 1449 ).

Funke discloses Nuclear magnetic resonance study of three quaternary salts of naloxone and oxymorphone. The process for quaternizing naloxone by allyl bromide using dimethylformamide as a solvent anticipates the instant claims when A represents  $-C(O)$  and Y represents  $-OH$  in the instant compounds of formulae 1, 1 A, 2, 2 A, 3 and 3 A.

### ***Claim Rejections - 35 USC § 103***

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 1625

14. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

15. Claims 1-3, 6, 7, 11, 15, 28-32, 34 and 36-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goldberg ( U.S. Patent 4,176,186, cited on applicant's form 1449 ).

Goldberg discloses a process for quaternizing a tertiary N-substituted noroxymorphone. The process disclosed in examples 5 and 11 by Goldberg for quaternizing noroxymorphone by methyl bromide using dipolar solvent, dimethylformamide meets all the limitations of instant claims in the instant compounds of formulae 1, 1 A, 2, 2 A, 3 and 3 A except that when variables A and Y are other than  $-C(O)$  and  $-OH$ , respectively and furthermore, differs from the instant claim 15 by using a different dipolar solvent ( dimethylformamide instead of 1-methyl-2-pyrrolidinone ). However, it would have been obvious to one skilled in the art to quaternize any morphine alkaloid by the process of Goldberg using any dipolar solvent with the expectation of complete success since the substituents A, Z and Y are irrelevant in this process since it is the common N-R1 group in the instant pentacyclic compounds which is being quaternized.

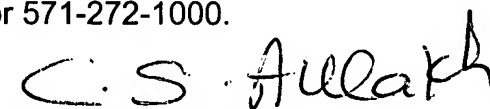
16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Charanjit S. Aulakh whose telephone number is

Art Unit: 1625

(571)272-0678. The examiner can normally be reached on Monday through Friday, 8:30 A.M. to 5:00 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas McKenzie can be reached on (571)272-0670. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
Charanjit S. Aulakh  
Primary Examiner  
Art Unit 1625